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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/632,322

08/01/2003

Munenori Oizumi

TI-35909

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23494

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TEXAS INSTRUMENTS INCORPORATED

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EXAMINER

ROSARIO, DENNIS

ART UNIT

PAPER NUMBER

2624

NOTIFICATION DATE

DELIVERY MODE

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ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

uspto@ti.com

<b>Office Action Summary</b>	<b>Application No.</b> 10/632,322	<b>Applicant(s)</b> OIZUMI ET AL.	
	<b>Examiner</b> DENNIS ROSARIO	<b>Art Unit</b> 2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 12 May 2009.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-5 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Response to Amendment***

1. The amendment was received on 5/12/09. Claims 1-5 are pending.

### ***Response to Arguments***

Applicant's arguments see remarks page 6, 1<sup>st</sup> paragraph, filed 5/12/09, with respect to 103(a) have been fully considered and are persuasive. The rejection of claims 1-5 has been withdrawn.

### ***Claim Objections***

2. Claims 1-5 are objected to because of the following informalities:

In general the claims have equations that do not identify what all the variable are.

For example, claim 1 has an equation  $p = R_{xx}(1)/(R_{xx}(0) + \delta)$ . Not one variable of the equation has been defined in claim 1 and has been broadly interpreted as a variable equal to a variable divided by said variable plus another variable. Note that  $p$ -p<sup>th</sup> has been partially defined, but that equation is still objected to for not defining all variables.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claim 2 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Art Unit: 2624

Claim 2 recites the limitation "said sin horizontal gle direction" in lines 3,4. There is insufficient antecedent basis for this limitation in the claim. Note that it appears to read as "said single horizontal direction". Still "said single horizontal direction" lacks antecedence in claim 1.

***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-4 are rejected under 35 U.S.C. 102(b) as being anticipated by Adriaanse (Adaptive Local Statistics Filtering).

Regarding claim 1, Adriassnse discloses a method of a digital signal processor for image filtering, comprising:

(a) computing a modified auto-correlation (via the method of Appendix A on pages 52-57 that derives a modified auto-correlation by introducing a lag that causes the auto-correlation to be modified or “adjusted” on page 56, last sentence as shown by equation A.7 on page 56 of the autocorrelation to find a desired effect) in a horizontal direction (as indicated in figures A.1 and A.2) for each pixel (or small squares in said figures) in an image, wherein the modified autocorrelation coefficient (corresponding to equation A.8 on page 56) is computed in horizontal direction (as shown by the arrows in said figures) near a pixel of interest (or any one of said squares) utilizing a formula in the form of  $R/(R+d)$  (or equation 3.12 on page 11) wherein a negative modified autocorrelation coefficient (as shown in fig. 3.1: “range of a” that is “-1” and “negative autocorrelation” on page 14, 2<sup>nd</sup> to last paragraph, 1<sup>st</sup> sentence) indicates a spectrum distribution (as shown in fig. 3.3) is around high frequency region (or “high edge content” on page 14, 2<sup>nd</sup> to last paragraph, 2<sup>nd</sup> sentence which is known to be of high frequency to one of ordinary skill in edge detection) and a positive modified autocorrelation coefficient indicates a spectrum distribution is around a low frequency region (this limitation is implied in Adriaanse given that the negative coefficient limitation has been met by Adriaanse);

Art Unit: 2624

(b) filtering (as shown in fig. 3.2) said image (fig. 3.2:X(n) with a lowpass filter (fig. 3.2:AVG has a "low pass response" on page 14, line 2), wherein said filtering adaptively changes (as shown in fig. 3.3(a) to 3.3(b)) according to the computed modified auto-correlation (as shown by the "a" axis in fig. 3.3) by applying said filtering (fig. 3.2) to regions ("regions" on page 14, last line) with the positive modified autocorrelation coefficient (corresponding to "Autocorrelation is positive" on page 15, line 2) and applying a low pass filter (said AVG in fig. 3.2) according (via a summer in fig. 3.2) to intensity (or frequency response as shown in fig. 3.3 that produces a filter that "tends to smooth very strongly" on page 14, 2nd to last paragraph, 3rd sentence), wherein the filtering intensity (said frequency response) is proportional to  $(p-p_{th})$  (as shown in equation 3.16 as  $a^2-2a\cos\Omega$ ), where  $p_{th}$  (or said  $2a\cos\Omega$ ) is a user defined parameter (since the "a" of  $2a\cos\Omega$  is the autocorrelation coefficient that has been indirectly determined by "trials" on page 56, 1<sup>st</sup> full paragraph, last sentence that requires the autocorrelation model to be "adjusted" on page 56, last sentence and accordingly the auto correlation coefficient as shown adjusted in equation A.8 on page 57. So, the "a" or autocorrelation coefficient is adjusted from trials from an implied "researcher" on page 1,3<sup>rd</sup> sentence); and

(c) interpolating (which is the same as smoothing as taught in Adriaanse) said image and said filtered image from step (b) wherein said interpolating at said each pixel depends upon said modified auto-correlation in said horizontal direction (this limitation requires is rejected the same as limitation (b) with the difference requiring another “iteration” on page 25, 2<sup>nd</sup> to last sentence from the results of limitation b) of a 2-dimensional embodiment: section 3.1.8 on page 24 by using the same method of limitation b) again on the result of limitation b)).

Claim 2 is rejected the same as claim 1, limitation c). Thus, argument presented in claim 1c) is equally applicable to claim 2.

Regarding claim 3, Adriaanse discloses the method of claim 1, wherein:  
(a) said modified auto-correlation of step (a) of claim 1 is  $R_{xx}(1)/(R_{xx}(0) + \delta)$  (or equation 3.12 on page 11 or in detailed form in equation 3.13 on page 11)) where  $R_{xx}(\cdot)$  (or equation 3.9 on page 10) is the auto-correlation function for the pixel values in an interval about said each pixel and with the DC component removed (via said equation 3.13 when the condition of  $\Omega \neq 0$  occurs), and where  $\delta$  is a parameter (given that all of section 3.1 is “parametric” in Contents, page vi).

Regarding claim 4, Adriaanse discloses the method of claim 3, wherein:  
(a) said interpolating of step (c) of claim 1 depends upon the amount  $R_{xx}(1)/(R_{xx}(0) + \delta)$  (or said equations of claim 3.12 and 3.13) exceeds a threshold (implied by “stopping criteria” on page 25, 1<sup>st</sup> full paragraph, 2<sup>nd</sup> sentence).

***Claim Rejections - 35 USC § 103***

Art Unit: 2624

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Adriaanse (Adaptive Local Statistics Filtering) in view of Holm (US Patent 6,249,315 B1).

Regarding claim 5, Adriaanse does not teach a color channel of a color image.

Holm teaches a color channel of a color image in fig. 3:202.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Adriaanse's Wiener filter that filters images with Holm's teaching of a Wiener's filter with the color channel of fig. 3:302, because colors are used for a "preferred...color reproduction" in the abstract.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any



Art Unit: 2624

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DENNIS ROSARIO whose telephone number is (571)272-7397. The examiner can normally be reached on 9-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Bella can be reached on (571)272-7778. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/ Dennis Rosario/  
Examiner, Art Unit 2624

/Matthew C Bella/  
Supervisory Patent Examiner, Art  
Unit 2624

Application/Control Number: 10/632,322  
Art Unit: 2624

Page 9